Edgar J. Cyriax

LECTURE

ON

The Swedish Movement Treatment

(LING'S SYSTEM)

BY

HARALD BILLBERG

GRADUATE OF THE ROYAL GYMNASTIC CENTRAL INSTITUTE, OF STOCKHOLM, SWEDEN

LONDON

BY H. K. LEWIS, 136, GOWER STREET

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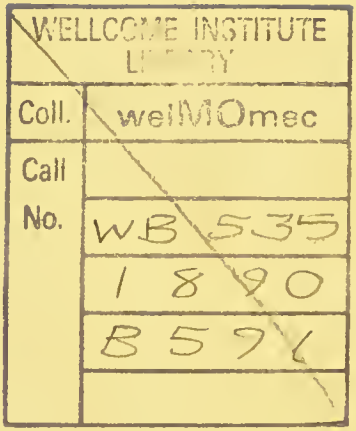
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MANY friends interested in the Swedish Movement Treatment, being prevented by previous engagements from being present at the delivery of my Lecture, have expressed the wish to see it in print. I readily respond to their request.

HARALD BILLBERG.

5, FITZROY SQUARE,
LONDON, W.,
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THE

SWEDISH MOVEMENT TREATMENT.

Owing to the general want of knowledge in this country of what is meant by "The Swedish Movement Cure," or, as I prefer to call it, "The Swedish Movement Treatment," I have been requested by some friends to give a short lecture on the medical division of Ling's System, as I have the honour of being a humble representative of this System in London. I hope you will kindly excuse me if I now and then should express myself a little awkwardly, as it is not an easy thing for a foreigner to overcome all the difficulties which meet him when he tries to explain his meaning in your language.

Movements for developing the body harmoniously, for maintaining the strength of the body and for curing or alleviating diseases were in use long ago, especially amongst the Greeks. But during the Middle Ages

systematic, rational movements, like many other good things, fell into disuse. From this oblivion the Swede Per Henrik Ling succeeded in reviving the idea of treatment by systematic bodily exercises, of which he had heard the ancient poets sing and fondly praise, but not in detail describe. A prominent English physician, Dr. A. Wallace, explains the origin of Ling's idea thus: "Ling was a man of rare genius, who by his poetry aroused the patriotic spirit of his countrymen about the time when Sweden was compelled by the war of 1809 to cede Finland to Russia, and by his anatomical and physiological studies prepared himself for establishing a system of gymnastics on a thoroughly rational basis, at first, I understand, with the hope of improving the constitutions of his countrymen, many of the best physical specimens having been killed in the devastating wars. He resolved to appeal to his Government, and tried to demonstrate that—the numbers having been reduced—they ought to aim at improving the quality of those remaining, and especially of their successors. As a result of this appeal, and at his instigation, the Royal Central Institute of Gymnastics was established at Stockholm by the Government, under his own personal supervision."

The treatment is based upon strictly scientific prin-

ciples, and for carrying it out properly we must have studied the human body in health and disease, the laws of the action of the organs and the effect of the different movements upon them. Such an education is given at the Royal Central Institute of Gymnastics at Stockholm, and without having taken our examinations there, for which three years' study is now required, and being legalized medical gymnasts by the Royal Medical Government, we have no right to practise this treatment in Sweden. We co-operate most willingly with physicians and surgeons for carrying out this method of treatment, and I hope the time is not far distant when English practitioners will with confidence send their patients to a thoroughly qualified and legalized medical gymnast for undergoing treatment by Ling's system of movements.

Before beginning the description of Ling's method, I shall in the first place endeavour to show the effects of exercise in general upon the human organism.

It is well known that a change of material is constantly going on in our bodies. This regenerative process is absolutely necessary for maintaining the body in health. When disturbed, illness sets in, and if arrested in any member of the body, that member atrophies and dies, or if in the whole system death takes

place. The human body is so constructed that a moderate amount of exercise maintains this process of regeneration in a normal condition, either too much or too little having a deleterious influence upon it. Therefore over exertion is as bad as too little exercise, for changes take place in the nervous, vascular, and muscular systems either from too much bodily labour or by leading a lazy life. A muscle, or set of muscles, that has too much to do may undergo degeneration, a like result following too little exercise. An indication of the physiological necessity of this regeneration is hunger. Every one knows that he cannot do without food for any length of time without his body losing in weight. The body becomes thin owing to its tissues being consumed, the fat first of all becoming absorbed, and thereafter the other structures becoming reduced in size and weight. In fact, oxidation of the tissues goes on as a chemico-vital process, during which the same matters are formed as when anything is burnt. These products of combustion are carbonic acid, water, and ash, which are carried out of the system by the lungs, kidneys, and skin. Along with this oxidation there is heat evolved according to the intensity and rapidity of the oxidation. These changes go on in all the tissues of the body, and the material which has been oxidized

must be renewed; if not, ill-health comes on. Health may thus be regarded as normal regeneration, illness a disturbed one, and death results from complete stoppage of regeneration.

As we have already said, a moderate quantity of exercise is requisite for normal regeneration. Many of the organs of our body act independently of our will, and we cannot by voluntary act prevent them from fulfilling their functions. Amongst the organs acting involuntarily are the heart, the digestive organs, the kidneys, and, in a measure, the lungs, as well as the nerves that regulate their respective action, and the blood-vessels which supply them with nourishment. The reverse is the case with the voluntary muscular system, which is more or less complicated in its structure, and forms a large proportion of the body, as well as the nerves and blood-vessels connected with the same, and the bones and ligaments which by muscular contraction are acted upon. This voluntary muscular system makes up more than three-quarters of the whole body, and it is impossible that we can maintain a normal state of health without exercising it in all its parts. In following the ordinary duties of life we are of course obliged to use our muscles, but owing to the artificial existence led by many in these days, the right amount of exercise is

seldom taken, and, moreover, in many occupations there is only a limited set of muscles brought into play, and these very often are too continuously exercised, and as a consequence they become overstrained, while the other muscles of the body are atrophied from want of proper use. Neuroses characteristic of certain professions, as writer's cramp, piano-player's cramp, &c., are illustrations of this fact. In order to make up for the want of general muscular exercise, which, as we have seen, is a necessary accompaniment of most professions and trades, especially the sedentary ones, many persons think that by taking an hour's daily walk they are having sufficient exercise to maintain their bodies in perfect health. No doubt walking is a good form of exercise when taken in the open air, but it has the same fault which exists in most professions and trades, for only a few muscles of the body are thereby exercised—not even the whole of the leg-muscles—and, moreover, the muscles of the back are kept during the exercise of walking in a state of more or less continuous contraction. Whereas, viewed from a rational standpoint, exercise to be perfect in its effect should consist of alternate *complete* contraction and extension of the muscles, not merely automatically performed, which is the case in walking, but the attention must be

directed to the movements which are going on. Walking, therefore, as a rational exercise, is of inferior value to the systematic movements employed in Ling's System, and also to riding on horse-back, swimming, rowing, &c.

When a muscle is exercised a greater amount of oxidation goes on than when it is in a state of repose. Physiologists tell us that as a result of exercise and consequent oxidation of the complex chemical compounds in the muscles we have an increased formation of matters, which we may regard as the ash resulting from the wear and tear of the muscles and the concomitant production of heat. These are carbonic acid, lactic acid, butyric acid, creatine, &c., which go along with the feeling of exhaustion, experienced after excessive exercise. As a consequence of, and to make good the loss of, this increased oxidation in active muscles, an increased supply of blood must enter the tissues for restoring what is used up. Thus the more exercise we take the more need we have for nourishing blood, and the blood being formed from the digestion of the food we eat, consequently a larger quantity of food is required. The appetite of hunger is thus increased after exercise, as every one has experienced. After food has been digested, it is taken up by the lymph-vessels and veins from the intestines; and before

it can be of any use for restoring the worn-out tissues it must, in the first place, be brought to the heart and thence to the lungs for being purified. As a result of exercise an increased activity takes place in the circulatory and respiratory systems, the heart acting more efficiently, and the lungs filling with air more rapidly and more fully.

The products of the oxidation in the muscular tissues must be carried out of the system as effete material, and this is effected chiefly by the kidneys, but also by the lungs and skin, which, as we have seen, are stimulated to increased activity by exercise. This may be regarded as the *chemico-vital* process which goes on, and is intensified by movements.

But during muscular activity a distinct *mechanical* result also takes place. The soft parts, making up the muscles which are freely supplied with lymph—and blood-vessels, are compressed during contraction, and this materially assists the propulsion of the fluids towards the heart, especially as these vessels are provided with valves which prevent the fluids going in the opposite direction. We would naturally think that the contraction of muscles which increases the onward current of the lymph and blood in the lymphatics and veins towards the heart would also as much retard the

flow of the arterial blood towards the periphery, but the blood in the arteries is not impeded in its course because of the strong elastic walls of the arteries and the high blood-pressure within them from behind, as a result of the contraction of the heart.

The great majority of the muscles of the body are attached to the bones, and their contraction is associated with the movement of joints. The structures of which the joints are made up, namely, bones, ligaments, tendons, &c., are found to be more fully developed in those who take regular systematic exercise, thus proving the beneficial influence of exercise on these harder structures, and consequent improvement of the general physique.

Let us now see the effects of muscular exercise on the nervous system. Every one knows that every movement in our bodies is performed by and under the control of the nervous system: all the involuntary movements are in relation to the sympathetic, the voluntary ones to the cerebro-spinal system. The will governs all the voluntary movements, and if we wish to stretch our leg our will must transmit the order to the muscles which perform this action by means of the spinal cord and spinal nerves and nerve-centres, under the control of which these muscles immediately stand. From this

it is apparent that every contraction of a muscle or set of muscles forms a complex series of action in the brain, spinal cord, nerves and muscles. Therefore we may say from this point of view, that muscular exercise is really exercise of our nervous system, and, as we have seen, exercise of muscles causes a livelier circulation of elements in their tissues, so also an increased activity of nerve-elements results; and as muscular exercise is quite necessary for keeping up the regeneration in the muscles themselves, just as necessary is it for renewing the nutrition of the nervous system. The more attention and energy we put into the performance of any exercise the more benefit results to the nervous system. This we can easily discover from the refreshing feelings subsequent to movements that we are not accustomed to do every day, and which are quite different from those after exercises which by repetition have become more or less automatical.

We see from this description of muscular movements in general that an influence is exerted upon nearly every organ of the body. If these movements, *as is the case in Ling's System, can be perfectly estimated as to strength, exactly localized as to effect, and specially adapted to the differences in the form and function of the various parts of the body, which movements in*

general can not be, it will be easily understood why the employment of this System is so important for developing the body harmoniously, for maintaining the body in health, and for restoring it when disturbed. Ling's System avails itself of two different kinds of movements, active and passive. *The active* are performed by the patient himself, starting from a given position, by his own muscular energy, whilst the operator opposes a studied resistance, according to the strength of the patient, and the effect aimed at. *The passive* movements are performed by the operator on the patient without any physical energy being expended on his part. The active movements are many and varied, and of necessity must be so, as the beneficial effect of a movement, or set of movements, may require to be localized in any muscle, or group of muscles, of the body. In active movements the relative position of any joint is changed ; for not only have we the ordinary hinge-like movements of bending and stretching in a simple joint, but many of the articulations are capable of complex movements, not only of mere flection when it is bent, of extension when it is straightened out, of abduction when it is drawn away from the middle line, of adduction when it is brought towards the middle line, but of rotation when the limb turns on its own axis, and of circumduction

when the whole limb is made to rotate round an imaginary axis. Besides, many joints can be exercised at the same time, as, for example, in leg-stretching, in which several groups of muscles are brought into action, and operate on the hip, knee, and ankle joints. If the body be placed in different positions while performing a given movement, several groups of muscles can thus be brought into activity in a definite order; for instance, in stretching of the arms this can be done with the trunk erect, the body in standing position, the muscles of the back not being much strained; but the same movement of the arms can be made with the trunk thrown forward, necessitating increased contraction in all the back muscles.

The Movement Treatment recognizes the exact anatomical construction of the body, and notes that the muscles which bend, stretch, or twist a joint are not so strong at every point of their contraction, depending upon the fact that the length of the lever is altered with the alteration of the relation between the two bones which the muscles act upon. When the operator knows the theories of action of the different joints and the muscles affecting them, he is able to apply just the right amount of resistance during the different stages of the movements.

Besides, the movements, when rightly performed, must bend, stretch, twist, etc., the joints exactly as much as their natural construction permits, and neither more nor less; for, if so, the good effects of the movements are lost, and the agreeable sensations which, as a rule, are proof of the efficacy of the treatment are absent.

We see, then, that we can by means of active movements cause distinct local effects upon any part of the body; and this is still more the case when, as is always done in this method of treatment, they are employed in combination with the passive ones.

These latter movements are applied, as before said, to the patient without putting any strain whatever upon his muscular power. They consist of shakings, tappings, compressings, kneadings, rollings, rubbings, passive bendings, and stretchings, etc. *Shakings*, when given moderately, stimulate the energy of the vaso-motor nerves, that is, the nerves which control the contraction of the walls of the blood-vessels, thus increasing the circulation in them, and, consequently, greater activity in the tissue-change of the part affected. If these be too prolonged, the reverse effect may take place. *Tappings*, with more or less force, have a similar effect, but act on deeper vessels and nerves. *Compressing* a nerve-stem causes more vital energy in the parts to which the

nerve distributes branches. Sometimes when the nerve-sheath is inflamed, the exudates caused by the inflammation are dispersed by means of compressings, and by other manipulations brought into the circulation and carried out of the system. By *kneadings and rubbings* waste matters which have been delayed in the lymph-spaces of the tissues, often causing neuralgia, are carried forward in the lymph-vessels and small veins into the large venous trunks. *The rolling* of a joint causes a quicker circulation of blood from the distal part of the limb towards the heart. The reason of this is that the veins in the neighbourhood of the joints are more or less fixed to the fasciæ around, and by the rotatory movements are alternately lengthened and shortened. When a vessel is moderately lengthened it can, of course, contain more blood, and when this lengthening is followed by a shortening, then the vessel holds less. These vessels being provided with valves, which permit the blood to pass in the direction towards the heart only, the consequence is that these rolling movements must act in a pump-like manner in assisting this circulation. Persons suffering from cold feet, which is due to imperfect circulation, will soon find that by rolling their feet actively, or passively, they become warmer, owing to the greater activity in the vessels. Rollings of joints, as well as

passive bending and stretchings, give increased suppleness to the ligaments, capsules, tendons, and surrounding tissues. Many of these passive movements act in a reflex manner, as, for instance, in chest-clapping, where the stimulation of the sensory nerves of the skin is carried to the spinal cord, and thence to the medulla oblongata, in which the respiratory nerve-centre is situated. The impression is carried down through the vagus nerve, which supplies the lungs with nerve-power, and thus the inhalation power of the lungs is stimulated. The result of this chest-clapping is, that one breathes much more easily after this procedure.

In practising Ling's System we always combine the active and passive movements. *Herein lies the strength of this System, compared with other methods.* Some of the passive movements are now-a-days used all over the world under the name of "Massage," but comparatively little can be done by these alone in comparison with the results effected by the active and passive movements in combination.

I shall now enumerate some of the many diseases for which this treatment is specially applicable.

First of all, *gout.* This is a constitutional disease which is very common in this country. Without entering too minutely into its pathology, it may be said that

oxidized proteid matters, which ought to have been eliminated from the system, are not properly carried away, but by a chemico-vital process unite with soda to form a salt, the crystals of which are found in the nodules situated in the tissues around the joints. In this disease, then, we have a disturbed regeneration of the nutrition of the body, and if we remember what has been stated regarding the effect of movements on tissue-change, we will understand the beneficial effect of these active and passive movements in this disease. Little can be done by this treatment during the existence of an acute attack, but very much indeed can be done in chronic cases by way of preventing the onset of renewed attacks, and removing the effects of previous ones, provided always the patient is careful in his diet. No other treatment can compare with this for the removal of the gouty stiffness of joints, and for the cure of neuralgia, which are sometimes so troublesome in gouty subjects. What has been said regarding gout applies with equal force to the somewhat similar and closely-allied disease *rheumatism*, and Ling's method of treatment is even more efficacious in the removal of the consequences of rheumatic attacks.

Another constitutional disease for which these rational movements are especially beneficial is *anæmia*. In this

disease there is a disturbance in the formation of the blood, so that the quantity of the red blood-corpuscles is diminished, and the blood, although not reduced in quantity, becomes more watery. Along with the diminution of the red blood-corpuscles we find loss of appetite, indigestion, palpitation of the heart, cold hands and feet, languor after the slightest exercise, and great general weakness. The movement-treatment by its oxidizing effect upon the tissues, increases the desire for food, and improves the digestion of it, at the same time the circulation of the blood is equalized, and especially by chest-movements the lungs are more fully expanded, the blood thus becoming better oxygenated. A large number of cases occurring especially in young females about the time of puberty, is treated at the different institutes in Sweden, and when continued for a time excellent results take place.

Amongst *the disturbances of the nervous system* we may, in the first place, note nerve-exhaustion, which occurs in men and women, and may be called the disease of modern life. No anatomical changes in the nerves, or nerve-centres, have been discovered to account for many of the symptoms associated with this general weakness, so that they may be regarded as functional disorders. The general symptoms are loss

of energy, mental and physical, sleeplessness, sometimes great prostration, at others desire for great excitement, etc. No doubt the cause of these symptoms is over-exertion, bodily or mental, or too great enjoyment of or struggle in, modern life. In this, as in all nervous disorders, hereditary predisposition plays an important part. The treatment consists principally of active move ments by which other centres in the brain and spinal cord than those which have in one way or another been over-stimulated are brought into activity. Thus the nerve-energy, which has, so to speak, overcharged certain parts of the nervous system, is derived from these and directed to other centres, as, for instance, to the motor-areas, and as a consequence a more active regeneration goes on in the previously overtaxed centres. Special symptoms, as headache, neuralgia, sleeplessness, etc., must be carefully attended to by means of passive movements, but always in combination with the more beneficial active ones. In these cases of nervous exhaustion, as well as in all constitutional disorders, while we advocate the rational use of movements, we also insist on our patients having recourse to all other hygienic means, as fresh air, diet, bathing, slight employment, etc., which are of an immense importance in supplementing our method of cure.

Sleeplessness, as already pointed out, is usually more a symptom of general nervousness than a special disease, and is often quite successfully treated by active and passive movements. Experience has demonstrated that swinging exercises and manipulations over the temples have the same calming influence upon the sufferer's brain as the to-and-fro movement of the cradle has upon the child.

Chorea, or *St. Vitus' Dance*, another nervous disease in which disturbance exists in the co-ordination of the muscles, and is the most prominent feature. This is often very successfully treated by rational movements, during which the patient's attention is very carefully and constantly directed to each movement during its progress.

Writer's cramp, which, as a rule, is not only a local complaint, but an indication of exhaustion of the nervous system in general, is a very unsatisfactory ailment to deal with by any method of treatment, but has in many cases yielded to that of Ling.

Paralysis being a symptom of several kinds of disease, can frequently be successfully treated by movements, if the original condition be such as to admit of any active treatment. If it be a consequence of central nerve-disease its treatment, of course, is not very gratifying ;

as, for instance, in cases of locomotor ataxy, in which we cannot hope to restore the degeneration of the spinal cord ; but we can, no doubt, to a certain extent improve the loss of the co-ordination of the leg-muscles in walking. After a stroke of apoplexy or rupture of a vessel in the brain, weakness or paralysis always sets in on the opposite side of the body to that in which the effusion has taken place, owing to the nerve-fibres crossing at the junction of the brain and spinal cord. A fortnight or three weeks after the seizure movement-treatment ought always to be tried ; for although a cure cannot be guaranteed, yet very often good results from this treatment are experienced, depending upon the regenerative influence movements produce, and possibly the injured nerve-fibres in the nerve-centre or efferent nerves are restored. In these cases the active movements, which are used as soon as the least power of motility can be traced, play the greatest *rôle ;* but we also employ passive movements, principally nerve-compressions, which seem to act reflexly in bringing about a beneficial result. Amongst the paralyses of a more curable nature I may mention a special form of paralysis occurring in children, and that caused by prolonged disuse of muscles, in which atrophy is always present.

Amongst the *neuralgiæ* I must specially point out

sciatica, usually a most difficult disease to treat by ordinary medical means, but, as a rule, is most satisfactorily treated by movements, even in many chronic cases. The most common causes of it is cold, as well as gouty and rheumatic inflammations in the structures immediately surrounding the nerve. By active and passive movements—especially by passive stretching of the sciatic nerve—effected by extreme flexion of the hip-joint and extension of the knee, the exudates in the nerve-sheath and inflammatory products in the surrounding tissues are removed. There are other neuralgiæ which are also very satisfactorily treated by this System, such as those affecting the side of the head, neck, shoulder, etc.

Disorders of the circulatory system arising from organic disease of the heart, such as valvular lesions, fatty degeneration of the muscular substance of the heart, etc., can be very successfully treated by this method; the symptoms being very materially improved, although the original disease cannot be cured. When there exist such organic diseases of the heart, it is not powerful enough for propelling the blood satisfactorily to all the distant parts of the body, and as a consequence of this diminished blood-pressure in the arterial system, the blood is retarded in the veins in its course back towards the heart, and the circulation in the capillaries becomes

sluggish, with the well-known symptoms of cold hands and feet, difficulty of breathing, irregular action of the heart, etc. By movements very specially given we can supplement the heart in the propulsion of the blood, and those who are affected by such complaints, when they are able to have the treatment daily administered, will find that the symptoms remain in abeyance, and with care they may feel as if they had not any heart-trouble at all. The movements principally employed in heart-affections are rollings and inhalation-exercises, which act chiefly on the circulation in the veins, and along with these tappings and shiverings in the region of the heart, thus causing a stimulating effect upon that organ.

By Ling's System several *diseases of the lungs* can be successfully treated. I wish very specially to impress upon you its importance in treating those predisposed to pulmonary consumption. In children with a hereditary predisposition to this disease the chest is usually defective in its development, and as a result the upper part is reduced in size with narrow shoulders, and there is diminution of the breathing capacity. By active movements we are able to increase the expansion of the chest, and by inhalation exercises and several passive movements, to stimulate the respiration, and at the

same time to cause greater regenerative activity in the whole system.

In *asthma* occurring specially in young individuals, the chest assumes a characteristic appearance, the shoulders being drawn up, and the back bent. If rational movements be systematically employed, the tendency for spasmodic action in the bronchial tubes—which is the most marked condition in this disease—may be greatly diminished, and at the same time the chest may become more natural in its formation.

In those subject to *winter-catarrhs and bronchitis*, the more or less continuous use of rational movements, especially of the chest, lessens the tendency to the recurrence of these attacks.

Amongst the *disorders of the digestive organs* suitable for movement-treatment, I wish to mention chronic catarrh of the stomach and intestines, congestive and sluggish conditions of the liver, and constipation. In all these cases, of course, great attention to the diet is of first importance in curing these ailments, but along with movements, active and passive, more rapid and satisfactory results are accomplished.

It is in the treatment of *several joint diseases* that this method has achieved its greatest victories. Amongst these complaints I may mention sprains, and acute and

chronic inflammation of the lining membrane of the joints (synovitis). In general, a sprain of the ankle joint, for instance, when treated according to our principles, gets well in about eight days without the necessity of remaining in bed, whereas according to the ordinary treatment several weeks may elapse before a cure is effected. In synovitis, too, with watery fluid in the joint, the patient avoids requiring the application of plaster of Paris or other heavy bandages by means of which the extension-muscles of the calf always become more or less atrophied, thereby prolonging the ultimate complete recovery of the limb. *Chronic rheumatism* of joints, as previously mentioned, either with or without neuralgia, is in nearly all cases satisfactorily treated by movements.

Another disease which would almost require an entire lecture devoted to its discussion is *curvature of the spine*. Time, however, does not permit me to enter further in detail than to say that the cause of the disease lies either in the bones or in the muscles. Those cases in which the bones are diseased do not come within the scope of Ling's treatment, but those curvatures of the spine originating in weakness of certain muscles that balance the vertebral column, which fortunately is the most common condition, are suitable

cases for this treatment. We are able to localize the desired effect on any muscle or group of muscles, exercising, for instance, the weaker muscles on one side of the spine to a greater extent than those on the other side, thus regaining the normal balance of the spinal column. These cases often develop insidiously, and are usually connected with the inclined position assumed at the benches in schools. Very often minor curvatures are present without being noticed by the parents, and are only visible to a practised eye, so that it is well for parents to remember this tendency in school-children, and carefully have them examined from time to time, because when cases are developed to a greater degree, we are not always so fortunate as to effect a complete cure, but we can always improve the condition or prevent the disease developing further.

I have endeavoured, however imperfectly, in the short time at my disposal to give you a slight idea of the method of treating various diseases according to Ling's principles, and I have now to thank you for so patiently listening to my feeble attempt. I trust, however, that I have in some measure enlisted your sympathies in its favour, and that you will assist me in diffusing amongst your friends a knowledge of its benefits. I hope soon to see the day when in this great

country its usefulness will be appreciated, not only by the members of the medical profession, but when its principles will be utilized by the whole community in the development of the young and in the strengthening of the feeble, so that all may more and more realize the truth of the maxim that "Prevention is better than cure."